

REMARKS

In response to the Final Office Action dated May 20, 2005, please consider the following remarks. Reconsideration of the present application is respectfully requested.

Claims 1-20 stand rejected under 35 USC §102(a) over Crofts et al. Applicants respectfully disagree since the cited reference neither shows what Applicants have claimed nor what the Office Action asserts. With regard to claim 1, it requires that the needle valve member displace fluid through a restrictive flow passage when moving toward an open position, but requires an unrestricted flow area to fluid moving toward the closing hydraulic surface of the needle valve member over a portion of its movement toward the closed position. As stated in earlier responses, the Crofts reference teaches precisely an opposite relationship between its restricted and unrestricted flow area passages. In fact, the Crofts et al. fuel injector would be incapable of functioning if it included flow passages with flow areas as required by Applicants' claims. In other words, the flow area between the high pressure supply line to the control chamber (passage 54) must inherently be restrictive relative to the flow passage extending between the control volume 50 and drain (flow area 82), in order for the Crofts et al. device to work. Furthermore, because the Crofts device includes a drain control valve, fluid never flows into the control volume through any passage associated with the unrestricted flow area 82. Applicants' claims were specifically written to avoid being read onto A-Z control orifice type fuel injectors of a type typified by Crofts et al. Crofts et al. even explicitly describes the relative flow areas, which are different than those claimed by Applicants, at column 6, lines 55-57. The Office Action refers to column 5, lines 61-67 and column 6, lines 27-67 as supposedly including Applicants' claimed features. But as stated earlier, the only explicit statements in Crofts et al. that are relevant to the claim limitations identified above actually contradict both what the Office Action asserts and are the opposite to what Applicants have claimed. Simply because Crofts et al. teaches a thing that can be characterized as an orifice member that moves within its fuel injector, that is not enough to anticipate Applicants' claims.

After discussing the outstanding rejections with the Examiner, Applicants now understand, but do not agree, how claim 1 could be misinterpreted in the way relied upon

in the rejections. Since the reasoning behind the rejections has been only recently articulated in the telephone interview, Applicants respectfully urge that it would only be fair to enter this amendment, which merely prevents the claims from further misinterpretation, but without altering their intended meaning from that of the original submission.

With regard to claim 3, the Office Action asserts that spring 22 of Crofts et al. meets Applicants' claim limitation that a compressed spring is operably positioned in the injector body to bias the orifice member toward one of the first and second positions. The item 60, which is identified in Crofts et al. as Applicants' orifice member, is flatly not biased by the Crofts et al. spring 22. Instead, Crofts et al. explicitly teaches at column 4, lines 55 through column 5, line 4 that its spring 22 biases its needle valve member 18 downward towards its seat, and simultaneously biases its guide sleeve 28 upward to seal its pressure control chamber 50. Therefore, the rejection against claim 3 should be withdrawn over and above the reasons set forth with regard to claim 1.

Claim 4 should also be allowable over and above its base claims 3 and 1 since it explicitly requires that the biasing spring be operably positioned between the orifice member and the needle valve member. While it is true that the Crofts et al. spring 22 biases its needle valve member, it has interaction with item 60, which is identified as Applicants' claimed orifice member. Therefore, the Crofts et al. device is incapable of satisfying all the limitations required by claim 4, and Applicants respectfully request that the outstanding rejection against claim 4 be withdrawn over and above the reasons set forth with regard to claims 3 and 1.

Claim 5 should also be allowable over and above its base claims since it specifically requires that the spring be compressed between the needle valve member and the orifice member. Again, the spring 22 of Crofts et al. has absolutely no interaction with its item 60, and therefore can not satisfy the requirements of claim 5. Therefore, Applicants again respectfully request that the outstanding rejection against claim 5 be withdrawn over and above the reasons set forth with regard to its base claims.

With regard to claim 6, a close reading of this claim inherently means that flow area through and around the orifice member is restricted to flow in one direction but unrestricted to flow in the opposite direction. Since fluid only flows in one direction

through the Crofts et al. item 60, it inherently can not satisfy all the limitations required by claim 6. Therefore, Applicants respectfully request that the outstanding rejections against claim 6 be withdrawn over and above its base claims.

Claim 7 requires that the unrestricted flow area be a combination of the restricted flow passage through the orifice member and at least one additional flow passage. There should be no dispute that Crofts et al. fails to show anything that could be fairly characterized as an unrestricted flow area that includes a restricted passage and one additional flow passage in combination. Therefore, Applicants respectfully request that the outstanding rejections against claim 7 be withdrawn over and above the reasons set forth with regard to its base claims.

Claim 8 should also be allowable over and above the reasons set forth with regard to claim 7 since it specifically requires that the additional flow passage include an annular flow area between the orifice member and the injector body. Again, Crofts et al. fails to show such feature. Instead, like several of Applicants' dependent claims, the Office Action merely repeats Applicants' claim language and points to nonexistent features in the Crofts et al. reference as supposedly satisfying Applicants' claim limitations. Therefore, Applicants respectfully request that the outstanding rejections against claim 8 also be withdrawn.

Claim 9, contrary to claim 8, requires the additional flow passage to be actually defined by the variable area valve member (orifice member). Claims 8 and 9 were specifically intended to cover different embodiments of the invention. It is inherently impossible for the Crofts et al. device to satisfy the claim limitations of both claims 8 and 9, since it is inherently impossible for a flow passage to both include an annular flow area between a valve member and an injector body, and also be defined by the same valve member. Therefore, Applicants respectfully request that the outstanding rejection against claim 9 be withdrawn.

Claim 12 should be allowable over and above the reasons set forth with regard to claim 1 since it specifically requires that the orifice member include an opening hydraulic surface exposed to fluid pressure in an upstream portion of the needle control passage. However, it does not even appear as if this claim was examined. Item 60 of Crofts et al. includes a bottom surface exposed to fluid pressure in its control chamber 50, and an

opposite end exposed to a low pressure drain. Thus, there is no contemplated pressure condition of the Crofts et al. injector in which hydraulic fluid could act on item 60 to move it off of its seat 70. Therefore, Crofts et al. is inherently incapable of satisfying the limitations of claim 12. Therefore, Applicants again respectfully request that the outstanding rejections be withdrawn.

Claim 13 also should be allowable over and above the reasons set forth with regard to claim 1 since it specifically requires that the orifice member remain stationary when the needle valve member moves from its closed position toward its open position. The Crofts et al. fuel injector, on the other hand, inherently requires movement on the part of its item 60 in order to relieve pressure in its control chamber and allow its needle valve member 18 to move toward an open position. Therefore, it inherently can not satisfy the requirements of claim 13. But again, it does not appear as if this claim was even examined. Therefore, Applicants respectfully request that the outstanding rejection against claim 13 be withdrawn over and above the reasons set forth with regard to claim 1.

Claim 14 is addressed to different embodiments of the claimed invention which specifically require that the orifice member remain stationary when the needle valve member moves from the open position toward a closed position. Again, because the needle valve member of Crofts can not move in either direction without corresponding movement of its item 60, it is inherent incapable of satisfying the limitations of either claims 13 or 14. Therefore, Applicants respectfully request that the outstanding rejections against claim 14 be withdrawn.

Claim 15 should be allowable since it specifically requires that fluid flow in two different directions through the same passage depending upon whether the needle valve member is moving toward an open or closed position. Again, since Crofts et al. teaches a drain control strategy, fluid never flows in two directions through any of its control passages, and certainly none associated with its item 60, which is identified as Applicants' claimed orifice member. Therefore, Applicants respectfully request that the outstanding rejections against claim 15 be withdrawn.

Claim 16 should be allowable over and above claim 15 since it specifically requires that the orifice member be biased. Again, the Crofts et al. includes no such biasing. Therefore, claim 16 should be allowable over and above claim 15.

Claim 17 specifically requires that the needle valve member and the orifice member be biased with a common biaser. Again, the spring 22 identified in Crofts et al. may bias its needle valve member, but it has absolutely no interaction with item 60 of Crofts, which is identified as Applicants' claimed orifice member.

Claim 19 should be allowable over and above the reasons set forth with regard to claim 15 since it specifically requires that the orifice member be moved between a restricted position in an unrestricted position. But Crofts et al. shows nothing associated with item 60 that could be fairly characterized as being moveable between an restricted and unrestricted positions.

Applicants respectfully insist that this application is in no condition for appeal. The Board's time should not be wasted with an appeal, and it does not even appear as if some of Applicants' claims have been examined. Therefore, Applicants respectfully request that the Examiner take the time to specifically evaluate Applicants' claim language in a fair manner. When this is done, the Examiner should find that the claims were specifically written to avoid A-Z surface control fuel injectors of the type typified by Crofts et al. When this is done, it should be relatively clear that none of Applicants' claims can properly be rejected under the mandates of the MPEP and relevant case law in view of what is fairly taught by Crofts et al.

This application is believed to be in condition for allowance of claims 1-20. However, if the Examiner believes that some additional clarification would put this application in even better condition for allowance, the Examiner is invited to contact Applicants attorney at (812) 333-5355 in order hasten the prosecution of this application.

Respectfully submitted,

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